

## **REMARKS**

Claims 1-34 are currently pending, and claims 1, 9, 11, 13, 15, 16, 18, 20, 31 and 34 have been amended herein. Applicants respectfully request reconsideration of the captioned application in view of the foregoing amendments and the following remarks.

### ***Claim Objections***

Section 2 of the office action objected to claims 9, 11, 13, 15, 16, 18 and 20 because “A” was not defined. In the current application, “A” is used conventionally to represent amplitude. The claims have been amended to correct this informality.

Section 3 of the office action objected to claims 31 and 34 due to a typographical error. Claims 31 and 34 have been amended as suggested in the office action.

### ***Claim Rejections – 35 USC § 102***

Sections 4-12 of the office action rejected claims 1-3, 6, 7, 24-26 and 28-29 under 35 USC 102(b) as allegedly being anticipated by U.S. Patent No. 5,888,242 to Antaki et al (“Antaki”). Applicants respectfully traverse these rejections.

Referring to col. 4, lines 37-41 of Antaki, the office states that Antaki discloses “calculating a suction probability index that provides an indication of the imminence of ventricle collapse.” It is well accepted that, to anticipate a claim, each claim limitation must be disclosed in the prior art reference. *See*, MPEP 2131. The cited portion of Antaki is as follows:

*“FIG. 3 depicts, in flow chart form, the foregoing mode of operation of microprocessor 20. As shown in that figure, the microprocessor periodically, at the appropriate time intervals mentioned above, computes the blood flow rate  $Q$  and tests the maximum speed at which the pump 12 can be operated without causing ventricular collapse.”*

The cited portion of Antaki merely discloses operating the pump at a maximum speed without causing ventricular collapse. There does not appear to be a disclosure of calculating a suction probability index in this cited portion. The office action goes on to note, “An index is merely something that indicates or points out.” However, the claims recite a *probability* index – an index that gives an indication of the probability of suction. Further, several sources show that an index is not merely something that indicates or points out but, as defined by:

The American Heritage® Dictionary of the English Language, Fourth Edition: *A number derived from a formula, used to characterize a set of data.*

Princeton University, an index is: *a: a number or ratio (a value on a scale of measurement) derived from a series of observed facts; can reveal relative changes as a function of time.*

Merriam-Webster Dictionary, an index is: *a number (as a ratio) derived from a series of observations and used as an indicator or measure; specifically: INDEX NUMBER b: the ratio of one dimension of a thing (as an anatomical structure) to another dimension.*

As used in the present specification and claims, the probability index is not merely something that indicates or points out. The specification clearly distinguishes the disclosed calculated *probability index* from prior art binary indicators such as that disclosed in Antaki, which simply sets an imminent collapse flag (see Figure 3 of Antaki) in response to a comparison to a predetermined threshold. There does not appear to be a suggestion or disclosure of calculating a continuous probability index, such as an index presented as a percentage with a higher index indicating a higher probability of collapse. This is key to controlling a pump more effectively and avoiding suction before it happens.

Independent claims 1 and 28 have been amended to more clearly note that the probability index is calculated based on the analysis of the time-based parameter.

Since Antaki fails to disclose the calculation of a probability index, it cannot anticipate independent claims 1 or 28, or any claim dependent thereon.

### ***Claim Rejections – 35 USC § 103***

Sections 13-24 rejected claims 4, 5, 8-15, 18, 20, 22, 23 and 30-34 under 35 USC 103(a) as allegedly being unpatentable over Antaki alone or in combination with other references.

Claims 4, 5, 8-15, 18, 20, 22 and 23 all ultimately depend from claim 1, and claim 30 depends from claim 28. Claims 1 and 28 are believed to be in condition for allowance as noted above in the remarks concerning the rejections under 35 USC 102. Claims 4, 5, 8-15, 18, 20, 22, 23 and 30 are thus patentable for at least the same reasons.

Claim 31 includes a limitation regarding calculating a suction probability index that provides an indication of the imminence of ventricle collapse, similar to limitations recited in claims 1 and 28 discussed above. Claim 31, and claims 32-34 dependent on claim 31, are thus allowable for at least the same reasons.

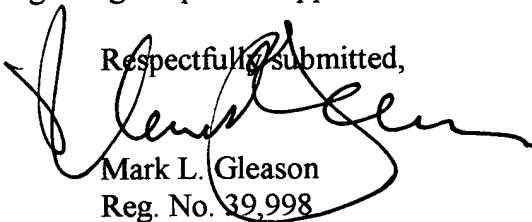
### ***Allowable Subject Matter***

Section 25 of the office action noted that claims 16, 17, 19, 21 and 27 would be allowable if rewritten in independent form. The Examiner's acknowledgement of the allowable claims is appreciated. However, claim 1, from which the allowable claims depend, is believed to be allowable for at least the reasons noted in this response. Therefore, Applicants believe no further amendments to claims 16, 17, 19, 21 and 27 are required.

### *Conclusion*

As evidenced by the foregoing amendments and remarks, Applicants have made a genuine effort to address each concern raised in the office action. All of the pending claims are believed to be in condition for allowance. The Examiner is invited to contact the undersigned attorney with any concerns or questions regarding the present application.

Respectfully submitted,



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